I TREATMENT OF STORAGE WASTE

Assume that the stored mixed waste will take 6 months to treat and the maximum of waste allowed will need to be treated.

Treat stored waste to LDR using permitted treatment processes.

7,000 cubic yards awaiting treatment are allowed at the facility of which 50 cy is funded separately for Thermal Desorption: 15,625 total

II STAGING AREA

Assume closure is completed within 24 month period. Existing buildings will be demolished and temporary facilities brought in.

Assume use of existing clean line and office facilities for half of closure period; trailers to be brought in for half

Clean Line- Assume 50' x 12' trailer

Field Office- Assume 50' x 12' trailer

Trailer delivery - assume 150 miles round trip from Salt Lake City per trailer

Temporary Decontamination facility- assume use of existing pads as long as possible; will need temporary pad for 2 months.

III STORAGE PADS AND MW TRUCK UNLOADING FACILITY

Assume all storage pads are excavated 0.5 ft deep; the pad base is 1 ft thick (above grade) throughout the site.

EXCAVATION

East Container Storage Area (includes 150' x 160' holding area at the south end of the pad)													
Asphalt	500	ft	l	x	160	ft	w	x	4	in	th	=	988 cy
	500	ft	l	x	160	ft	w					=	8889 sy
Storage Pad Base	500	ft	l	x	160	ft	w	x	0.67	ft	th	=	1986 cy
Soil Excavation	500	ft	l	x	160	ft	w	x	0.5	ft	th	=	1482 cy
Southeast Container Storage Area (concrete upgrade October 2003; drawing 03023-C03)													
Concrete	70	ft	l	x	96	ft	w	x	10	in	th	=	208 cy
	70	ft	l	x	96	ft	w					=	6720 sf
Storage Pad Base	70	ft	l	x	96	ft	w	x	0.67	ft	th	=	167 cy
Soil Excavation	70	ft	l	x	96	ft	w	x	0.5	ft	th	=	125 cy
South Container Storage Area (resurfacing upgrade September 2000; drawing 0013-01)													
Asphalt	383	ft	l	x	117	ft	w	x	4	in	th	=	554 cy
	383	ft	l	x	117	ft	w					=	4979 sy
Storage Pad Base	383	ft	l	x	117	ft	w	x	1	ft	th	=	1660 cy
Soil Excavation	383	ft	l	x	117	ft	w	x	0.5	ft	th	=	830 cy
Drainage Trough upgrade (2000)													
Concrete bottom	340	ft	l	x	3	ft	w	x	8	in	th	=	26 cy
	340	ft	l	x	3	ft	w					=	1020 sf
Concrete sides	340	ft	l	x	4.5	ft	ht	x	6	in	th	=	29 cy
	340	ft	l	x	4.5	ft	w					=	1530 sf
(Note: Two sides with width increasing from 0.5' to 4' as the trough slopes east to west; calculated as a single 4.5' wide wall)													
Central Container Storage Area													
Asphalt	300	ft	l	x	65	ft	w	x	4	in	th	=	241 cy
	300	ft	l	x	65	ft	w					=	2167 sy
Storage Pad Base	300	ft	l	x	65	ft	w	x	0.67	ft	th	=	484 cy
Soil Excavation	300	ft	l	x	65	ft	w	x	0.5	ft	th	=	362 cy
Total													9087.0 cy
Debris Excavation													2046.0 cy
Soil Excavation													7096 cy
Restoration of Grade (soil excavation volume only)												=	2797 cy
Final Grade													22755 sy

MW TRUCK UNLOADING FACILITY

This is the 'outside' dock located south of the East Container Storage Area; see drawing 9846-01.

Entire facility is maintained outside of the Restricted Area.

The Container Holding Pad (approx. 150' x 160') is included in calcs for the East Container Storage Area above.

DOCK

Retaining walls (2 each)	30	ft	l	x	3.33	ft	ht	x	8	in	th	=	5 cy
													100 sf
	50	ft	l	x	3.33	ft	ht	x	8	in	th	=	9 cy
													167 sf
Floor	50	ft	l	x	30	ft	w	x	8	in	th	=	75 cy
													1500 sf
Ramp	20	ft	l	x	10	ft	w	x	8	in	th	=	10 cy
													200 sf
Footings (2 each)	30	ft	l	x	4	ft	w	x	12	in	th	=	9 cy
													120 sf
	50	ft	l	x	4	ft	w	x	12	in	th	=	15 cy
													200 sf
Retaining wall (between truck access paved asphalt area and East Container Storage Area)													
	124	ft	l	x	3	ft	ht	x	12	in	th	=	28 cy
													372 sf
Retaining wall footing	124	ft	l	x	3	ft	ht	x	12	in	th	=	28 cy
													372 sf
Fencing and gates (assume)													2 cy
TRUCK ACCESS PAVED ASPHALT AREA													
Asphalt	105	ft	l	x	104	ft	w					=	1214 sy
	105	ft	l	x	104	ft	w		4	in	th	=	135 cy
Haul volume													316 cy

	Concrete 8" thick demolition area total															1967 sf
	Concrete 12" thick demolition area total															1064 sf
IV	**PUMP HOUSE AND WATER TANK**															
	Fig. 9317-M1															
	COST TO HAUL OFF SITE IS ASSUMED TO BE SAME AS SALVAGE VALUE FOR THE FOLLOWING:															
	Fire Pump															
	Water Pump															
	Water Tank															
	DEMOLITION															
	Pump House Steel Exterior															
	Wall Dimensions	North	20	ft	l	x	10	ft	ht	x	3	in	th	=		2 cy
	Wall Dimensions	South	20	ft	l	x	10	ft	ht	x	3	in	th	=		2 cy
	Wall Dimensions	East	14	ft	l	x	10	ft	ht	x	3	in	th	=		2 cy
	Wall Dimensions	West	14	ft	l	x	10	ft	ht	x	3	in	th	=		2 cy
	Roof Dimensions		23	ft	l	x	15	ft	w	x	3	in	th	=		4 cy
	Building Demolition Volume		20	ft	l	x	14	ft	w	x	10	ft	ht			2800 cf
	Debris Volume															12 cy
	Pump House															
	Floors		20	ft	l	x	14	ft	w	x	8	in	th	=		7 cy
	Debris Volume															7 cy
	Foundation (Pump House)															
	Stem Wall						68	ft	l	x	2	ft	ht	=		136 sf
	Footing Dimensions						68	ft	l	x	1	ft	w	=		68 sf
	Debris Volume															68 sf
	Debris Volume Estimate															
	Stem Wall						136.0	sf		x	6	in	th	=		3 cy
	Footing						68.0	sf		x	2	ft	w	=		6 cy
	Debris total pump house															9 cy
	Total Debris volume															28 cy
	EXCAVATION															
	None needed, outside of Restricted Area															
Va	**MIXED WASTE STORAGE BUILDING**															
	Figure 9517-1,9517-2,9517-3,9535-2,9535-3															
	DECONTAMINATION															
	Wash Tank #0080	Both Tanks Triple rinse to RCRA standards and decontamination														
	Top Dimensions		10	ft	l	x	7	ft	w	x	0.25	in	th	=		1.46 cf
	Bottom Dimensions		10	ft	l	x	7	ft	w	x	0.25	in	th	=		1.46 cf
	Wall Dimensions		10	ft	l	x	6	ft	w	x	0.25	in	th	=		1.25 cf
	Wall Dimensions		10	ft	l	x	6	ft	w	x	0.25	in	th	=		1.25 cf
	Wall Dimensions		7	ft	l	x	6	ft	w	x	0.25	in	th	=		0.87 cf
	Wall Dimensions		7	ft	l	x	6	ft	w	x	0.25	in	th	=		0.87 cf
	Debris Volume (cy)															0.3 cy
	Sludge Tank #0275															
	Top Dimensions		12	ft	l	x	5	ft	w	x	0.25	in	th	=		1.25 cf
	Bottom Dimensions		12	ft	l	x	5	ft	w	x	0.25	in	th	=		1.25 cf
	Wall Dimensions		12	ft	l	x	6	ft	w	x	0.25	in	th	=		1.50 cf
	Wall Dimensions		12	ft	l	x	6	ft	w	x	0.25	in	th	=		1.50 cf
	Debris Volume (cy)															0.2 cy
	Misc equipment decontamination (2 days)															
	DEMOLITION															
	Mixed Waste Storage building (building metal exterior)															
	Wall Dimensions	North	100	ft	l	x	22	ft	ht	x	3	in	th	=		21 cy
	Wall Dimensions	South	100	ft	l	x	22	ft	ht	x	3	in	th	=		21 cy
	Wall Dimensions	East	60	ft	l	x	22	ft	ht	x	3	in	th	=		13 cy
	Wall Dimensions	West	60	ft	l	x	22	ft	ht	x	3	in	th	=		13 cy
	Wall Dimensions	Interior	60	ft	l	x	22	ft	ht	x	3	in	th	=		13 cy
	Roof Dimensions		105	ft	l	x	64	ft	ht	x	3	in	th	=		63 cy
	Wall Dimensions	North	25	ft	l	x	6	ft	ht	x	3	in	th	=		2 cy
		South	25	ft	l		6	ft	ht	x	3	in	th	=		2 cy
		East	60	ft	l		6	ft	ht	x	3	in	th	=		4 cy
		West	60	ft	l		6	ft	ht	x	3	in	th	=		4 cy
	Building Demolition Volume		125	ft	l	x	28	ft	w	x	22	ft	ht	=		77000 cf
	Debris Volume (cy)															156.5 cy
	Mixed Waste Storage building (Framing walls)															
	Wall Dimensions	Interior	179	lf	l	x	8	ft	ht	x	4	in	th	=		18 cy

Debris Volume														18 cy
Foundation (Mixed Waste Storage Building)														
Stem Wall						380	lf	x	3	ft	ht	=		1140 sf
Footing Dimensions						380	lf	x	1	ft	w	=		380 sf
Footing						380	lf							380 sf
Debris Volume Estimate (Mixed Waste Storage foundation)														
Floor Dimensions		100	ft	l	x	60	ft	w	x	12	in	th	=	223 cy
Stem Wall						1140	sf		x	6	in	th	=	22 cy
Footing						380.0	sf		x	2	ft	ht	=	29 cy
Floor Area		100	ft	l	x	60.0	ft	w					=	667 sy
Debris Volume														274 cy
Mixed Waste Storage Building Secondary Containment Vault										34x15				
Wall Dimensions	long wall	33	ft	l	x	8	ft	ht	x	8	in	th	=	7 cy
Wall Dimensions	short wall	15	ft	l	x	8	ft	ht	x	8	in	th	=	3 cy
Debris Area (sf)						176	sf		x	2	sides		=	352 sf
Debris Volume (cy)						10	cy		x	2	sides		=	20 cy
Cover Dimensions		35	ft	l	x	17	ft	w	x	8	in	th	=	15 cy
Cover Area		35	ft	l	x	17	ft	w					=	595 sf
Floor Dimensions		33	ft	l	x	15	ft	w	x	10	in	th	=	16 cy
Floor Area		33	ft	l	x	15	ft	w					=	55 sy
Debris Volume Total														51 cy
Secondary Containment Vault Footings		34x15												
Footing Dimensions						68	lf		x	3	ft	w	=	204 sf
Footing Dimensions						30	lf		x	3	ft	w	=	90 sf
						98	lf							
Debris Volume						294.0	sf		x	12	in	w	=	11 cy
Foundation (Outside Wash Pad)														
Stem Wall	East and West					120	lf		x	6	in	ht	=	60 sf
Stem Wall	South					30	lf		x	6	in	ht	=	15 sf
Stem Wall	North					30	lf		x	6	in	ht	=	15 sf
Sum of N and S														30 sf
Debris Volume Estimate (Outside Wash Pad)														
Floor Dimensions		60	ft	l	x	30	ft	w	x	12	in	th	=	67 cy
Floor Area		60	ft	l	x	30	ft	w	x				=	200 sy
Stem Wall	East and West					60.0	ft	l	x	6	in	th	=	2 cy
Stem Wall						30.0	sf		x	12	in	th	=	2 cy
Debris Volume														71 cy
Outside Dock Walls (dimensions of ht are halved to account for ramp)														
Wall Dimensions	N Ramp wall	67	ft	l	x	2	ft	ht	x	8	in	th	=	2 cy
Wall Dimensions	S Ramp wall	67	ft	l	x	2	ft	ht	x	8	in	th	=	2 cy
Wall Dimensions	E wall	26	ft	l	x	4	ft	ht	x	8	in	th	=	3 cy
Wall Total (sf)														238 sf
Wall Total (cy)														7 cy
Floor Dimensions		67	ft	l	x	26	ft	w	x	8	in	th	=	44 cy
Floor Area		67	ft	l	x	26	ft	w					=	1742 sf
Debris Volume														51 cy
Outside Dock Footings														
Footing Dimensions		67	lf		x	2	ft	w	x	12	in	th	=	5 cy
Footing Dimensions		67	lf		x	2	ft	w	x	12	in	th	=	5 cy
Footing Dimensions		26	lf		x	2	ft	w	x	12	in	th	=	2 cy
Debris Volume		160	lf											12 cy
Drive Pad (North of Building in restricted area)														
Asphalt		250	ft	l	x	75	ft	w	x	3	in	th	=	174 cy
Debris Area Total (SY)		250	ft	l	x	75	ft	w					=	2084 sy
Debris Volume Total														174 cy
Total Haul Volume Est														819 cy
EXCAVATION OUTSIDE OF RESTRICTED AREA														
Parking lot														
Asphalt		200	ft	l	x	200	ft	w					=	4445 sy
		200	ft	l	x	200	ft	w		3	in	th	=	371 cy
Haul volume														371 cy
EXCAVATION														

Soil Excavation																
Drive Pad Base		250	ft	l	x	75	ft	w	x	12	in	th	=	695	cy
Soil Excavation of Building		100	ft	l	x	60	ft	w	x	6	in	th		112	cy
Soil Excavation Drive Pad		250	ft	l	x	75	ft	w	x	6	in	th	=	348	cy
Soil Excavation of Outside Pad		60	ft	l	x	30	ft	w	x	6	in	th	=	34	cy
Soil Excavation of 2nd Containment		33	ft	l	x	15	ft	w	x	6	in	th	=	10	cy
Soil Excavation of Outside Dock		67	ft	l	x	26	ft	w	x	6	in	th	=	33	cy
Total Soil														1232	cy
Restoration of Grade															
Soil Restoration															
Soil Excavation Storage Building		100	ft	l	x	60	ft	w	x	6	in	ht	=	112	cy
Soil Excavation Drive Pad		250	ft	l	x	75	ft	w	x	6	in	th	=	348	cy
Soil Excavation Outside Pad		60	ft	l	x	30	ft	w	x	6	in	th	=	34	cy
Secondary Containment		33	ft	l	x	15	ft	w	x	8	ft	ht	=	147	cy
Outside dock		26	ft	l	x	67	ft	w	x	2	ft	ht	=	130	cy
Total Grade Restoration Area														3199	sy
Total Backfill Volume														771	cy
Total Debris Volume															
Mixed Waste Storage building (building metal exterior)														157	cy
Mixed Waste Storage building (Framing walls)														18	cy
Debris Volume Estimate (Mixed Waste Storage foundation)														274	cy
Secondary Containment Stem Wall and Floor)														51	cy
Secondary Containment Footings														11	cy
Outside Wash Pad														71	cy
Outside Dock Walls														51	cy
Outside Dock Footings														12	cy
Drive Pad (North of Building in restricted area)														174	cy
Total Debris Volume														819	cy
Soil Excavation														1232	cy
Total Volume														2051	cy

Vb THERMAL DESORPTION UNIT

Costs are estimated for triple rinsing of the unit, decontamination, removal, and demolition.

General assumption that debris volume is		34	cy										=	34	cy

VIa MIXED WASTE TREATMENT BUILDING

DEMOLITION

Mixed Waste Treatment building

Mixed Waste Treatment building (building metal exterior)

Wall Dimensions	N Long	60	ft	l	x	30	ft	ht	x	3	in	th	=	17	cy
Wall Dimensions	N Short	30	ft	l	x	30	ft	ht	x	3	in	th	=	9	cy
Wall Dimensions	South	90	ft	l	x	30	ft	ht	x	3	in	th	=	25	cy
Wall Dimensions	East	110	ft	l	x	30	ft	ht	x	3	in	th	=	31	cy
Wall Dimensions	W Long	90	ft	l	x	30	ft	ht	x	3	in	th	=	25	cy
Wall Dimensions	W Short	20	ft	l	x	30	ft	ht	x	3	in	th	=	6	cy
Wall Dimensions	View W	20	ft	l	x	8	ft	ht	x	3	in	th	=	2	cy
Wall Dimensions	View N	10	ft	l	x	8	ft	ht	x	3	in	th	=	1	cy
Wall Dimensions	View S	10	ft	l	x	8	ft	ht	x	3	in	th	=	1	cy
Roof Dimensions	View	21	ft	l	x	11	ft	w	x	3	in	th	=	3	cy
Roof Dimensions	Long	95	ft	l	x	95	ft	w	x	3	in	th	=	84	cy
Roof Dimensions	Short	62	ft	l	x	22	ft	w	x	3	in	th	=	13	cy
Demolition Volume		90	ft	l	x	90	ft	l	x	30	ft	ht	=	243000	cf
Demolition Volume		60	ft	l	x	20	ft	l	x	30	ft	ht	=	36000	cf
Demolition Volume		20	ft	l	x	10	ft	l	x	8	ft	ht	=	1600	cf
Demolition Volume Total														280600	cf
Debris Volume (cy)														217	cy
Foundation (Mixed Waste Treatment Building)															
Stem Wall (Main Building)						360	ft	l	x	8	ft	ht	=	2880	sf
Stem wall (Equipment Room)						100	ft	l	x	4	ft	ht	=	400	sf
Stem Wall Total Area														3280	sf
Footing Dimensions (Exterior N,S)		8	am		x	10	ft	l	x	8	ft	w	=	80	sf
Footing Dimensions (Exterior E,W)		12	am		x	7	ft	l	x	7	ft	w	=	49	sf
Footing Dimensions (Equip room)		7	am		x	3	ft	l	x	3	ft	w	=	9	sf
Footing														138	sf
Debris Volume Estimate (Mixed Waste Treatment foundation)															
Floor Dimensions		90	ft	l	x	90	ft	w	x	12	in	th	=	300	cy
Area		90	ft	l	x	90	ft	w					=	900	sy
Floor Equipment Area		60	ft	l	x	20	ft	w	x	8	in	th	=	30	cy

Area	60	ft	l	x	20	ft	w				=	1200	sf
Floor View Area	20	ft	l	x	10	ft	w	x	6	in	th	=	4 cy
Area	20	ft	l	x	10	ft	w					=	23 sy
Stem Wall					3280	sf		x	12	in	th	=	122 cy
Footing					138	sf		x	2	ft	th	=	11 cy
Debris Volume													2590 cy

Misc Walkways

Assume a standard for all machines													3 cy

Outside slab footings

Footing Dimensions (Two Rollup Door)					54	lf		x	8	in	w	=	36 sf
Footing Dimensions (Receiving Vault)					40	lf		x	8	in	w	=	27 sf
													63 sf
Misc Footings Volume					62.7	sf		x	10.0	in	th	=	2 cy
Footing Dimensions (W. Sidewalk)					22	ft		x	6	in	w	=	11 sf
Footing Dimensions (N. Sidewalk)					21	ft		x	6	in	w	=	11 sf
Footing Dimensions (E. Sidewalk)					11	ft		x	6	in	w	=	6 sf
Footing Dimensions (NE Sidewalk)					19	ft		x	6	in	w	=	10 sf
													37 sf
Misc Footings Volume					37.0	sf		x	6.0	in	th	=	1 cy
Total volume of outside slab footings					1.9	cy		+	0.7	cy		=	3 cy

Misc Slab of Concrete

Slab Dimensions (Two Rollup Door)	34	ft	l		10	ft	w	x	10	in	th	=	11 cy
Area	34	ft	l	x	10	ft	w					=	38 sy
Slab Dimensions (Receiving Vault)	20	ft	l		10	ft	w	x	10	in	th	=	7 cy
Area	20	ft	l	x	10	ft	w					=	23 sy
Slab Dimensions (W. Sidewalk)	14	ft	l		4	ft	w	x	6	in	th	=	2 cy
Area	14	ft	l	x	4	ft	w					=	7 sy
Slab Dimensions (N. Sidewalk)	7.33	ft	l		7	ft	w	x	6	in	th	=	1 cy
Area	7.33	ft	l	x	7	ft	w					=	6 sy
Slab Dimensions (E. Sidewalk)	5	ft	l		3.33	ft	w	x	6	in	th	=	1 cy
Area	5	ft	l	x	3.33	ft	w					=	2 sy
Slab Dimensions (NE Sidewalk)	9	ft	l		5	ft	w	x	6	in	th	=	1 cy
Area	9	ft	l	x	5	ft	w					=	5 sy
Slab Dimensions (Baghouse)	28	ft	l		16	ft	w	x	24	in	th	=	34 cy
Area	28	ft	l	x	16	ft	w					=	50 sy
Outside slab footings													3 cy
Ramp Dimensions	32	ft	l	x	29	ft	w	x	10	in	th	=	29 cy
Area	32	ft	l	x	29	ft	w					=	104 sy
Misc concrete volume													89 cy
Misc concrete area													235 sy

Interior Concrete (Tank walls and footings - see sections VIb-VIf for calculations)

Waste Receiving Tank #1	41 cy
Tank #2 & #3	36 cy
Tank #4 & #5 and Wash Tank #6	55 cy
Interior concrete volume	132 cy

Summary of Debris Total

Building Volume	217 cy
Floor and Footing Volume (building)	2590 cy
Misc Volume	89 cy
Interior Concrete	132 cy
Grizzly Steel	36 cy
Primary and Tertiary Shredder Steel	4 cy
Mixer Tank #8	2 cy
Dust Collection System	16 cy
Debris Total	3086 cy

EXCAVATION OF MIXED WASTE TREATMENT BUILDING

Soil Main Area	90	ft	l	x	90	ft	w	x	6	in	th	=	150 cy
Soil Equipment Room	60	ft	l	x	20	ft	w	x	6	in	th	=	23 cy
Soil View Room	20	ft	l	x	10	ft	w	x	6	in	th	=	4 cy
Soil Volume													176 cy

Exterior Soil Excavation

Soil Excavation Two Rollup Door	34	ft	l		10	ft	w	x	6	in	th	=	7 cy
Soil Excavation (Receiving Vault)	20	ft	l		10	ft	w	x	6	in	th	=	4 cy
Soil Excavation (W. Sidewalk)	14	ft	l		4	ft	w	x	6	in	th	=	2 cy
Soil Excavation (N. Sidewalk)	7.33	ft	l		7	ft	w	x	6	in	th	=	1 cy
Soil Excavation (E. Sidewalk)	5	ft	l		3.33	ft	w	x	6	in	th	=	1 cy

Soil Excavation (NE Sidewalk)	9	ft	l		5	ft	w	x	6	in	th	=	1 cy
Soil Excavation Bag House	28	ft	l		16	ft	w	x	6	in	th	=	9 cy
													1185 sy
Soil Totals													22 cy
Total Soil													198 cy
Restoration of Grade (soil excavation volume)													198 cy

VIb WASTE RECEIVING TANK #1

DEMOLITION

Waste Receiver Tank #1 (fig. 9317-c5,c8)													
Walls	14	ft	l	x	5	ft	ht	x	1	ft	th	=	3 cy
Walls	15	ft	l	x	8	ft	ht	x	1	ft	th	=	5 cy
Debris Volume													8 cy
Area	14	ft	l	x	5	ft	ht					=	8 sy
	15	ft	l	x	8	ft	ht					=	14 sy
Foundation (Waste Receiver Tank #1)													
Footing Dimensions (south footing)					20	ft	l	x	13	ft	w	=	260 sf
Footing Dimensions					28	ft	l	x	3	ft	w	=	84 sf
Footing Dimensions					28	ft	l	x	3	ft	w	=	84 sf
Footing					84	sf		+	84	sf		=	168 sf
Area					168	sf		+	260	sf		=	48 sy
Total Area	8	sy		+	14	sy		+	48	sy		=	70 sy
Debris Volume Estimate													
Footings					168.00	sf		x	2	ft	th	=	13 cy
Footing Dimensions (south footing)					260.0	sf		x	2	ft	th	=	20 cy
Walls													8 cy
Total Debris													41 cy

VIc LIQUID WASTE STORAGE TANKS (Foundation and Future Construction)

DEMOLITION

Concrete

Leveling Pad	14	ft	l	x	10	ft	w	x	0.667	ft	th	=	4 cy
Tank Pad (26'L x 12'w overall), which for ease of volume calculations is subdivided into 3 sections													
	14	ft	l	x	10	ft	w	x	0.667	ft	th	=	4 cy
	26	ft	l	x	12	ft	w	x	0.75	ft	th	=	9 cy
	12	ft	l	x	12	ft	w	x	0.5	ft	th	=	3 cy
Debris Total													20 cy
Area	14	ft	l	x	10	ft	w					=	16 sy
	14	ft	l	x	10	ft	w					=	16 sy
	26	ft	l	x	12	ft	w					=	35 sy
	12	ft	l	x	12	ft	w					=	16 sy
													83 sy
Sump Pump Vault													
Walls	5	ft	l	x	5	ft	ht	x	1	ft	th	=	1 cy
Walls	6	ft	l	x	5	ft	ht	x	1	ft	th	=	1.1 cy
Walls	5	ft	l	x	5	ft	ht	x	1	ft	th	=	0.9 cy
Debris Total													4 cy
Area													9 sy
Foundation													
Footing Dimensions (south footing)					23	ft	l	x	2	ft	w	=	46 sf
Footing Dimensions					3	ft	l	x	2	ft	w	=	6 sf
Footing Dimensions					11	ft	l	x	2	ft	w	=	22 sf
Footing Dimensions					11	ft	l	x	2	ft	w	=	22 sf
Footing Dimensions					11	ft	l	x	5	ft	w	=	55 sf
													151 sf
													17 sy
Debris Volume Estimate													
Concrete Tanks													20 cy
Footing Dimensions					151.0	sf		x	2	ft	th	=	12 cy
Sump Walls													4 cy
Total Debris													36 cy
Total Area													109 sy
Total Debris													36 cy

VId PRIMARY & TERTIARY SHREDDERS, SIZING SCREEN TANK #4, AND TANK #5 & #6

DECONTAMINATION

Triple Rinse	2 Days
Radiological Decontamination	4 Days

DEMOLITION

Sizing Tank #4, #5, #6

Walls (North)					43	ft	l	x	9	ft	ht	x	1	ft th = 15 cy
Walls (from East to West)														
Wall 1					13	ft	l	x	9	ft	ht	x	1	ft th = 5 cy
Wall 2					13	ft	l	x	9	ft	ht	x	1	ft th = 5 cy
Wall 3					13	ft	l	x	9	ft	ht	x	1	ft th = 5 cy
Wall 4					13	ft	l	x	9	ft	ht	x	1	ft th = 5 cy
Debris Total														32 cy
Area														52 sy
Foundation (Sizing Tank #4, #5, #6)														
Footing Dimensions (North footing)									43	ft	l	x	2	ft w = 86 sf
From East to West														
Footing Dimension #1									12	ft	l	x	3	ft w = 36 sf
Footing Dimension #2									12	ft	l	x	5	ft w = 60 sf
Footing Dimension #3									12	ft	l	x	5	ft w = 60 sf
Footing Dimension #4									12	ft	l	x	5	ft w = 60 sf
Debris Total														302 sf
Area														24 sy
Debris Volume Estimate														
Footing Dimensions									302.0	sf		x	2	ft th = 23 cy
Walls														32 cy
Total Debris														55 cy
Total Area														76 sy
Tertiary Shredder														
Tube Lengths									2	pc		x	10	ft l = 1 cy
Tube Lengths									2	pc		x	6	ft l = 1 cy
Tube Lengths									2	pc		x	5.5	ft l = 1 cy
Tube Lengths									2	pc		x	5	ft l = 1 cy
Tube Lengths									2	pc		x	4.5	ft l = 1 cy
Tube Lengths									8	pc		x	2.5	ft l = 1 cy
Total Debris														4 cy

VIe MIXER TANK #8

DECONTAMINATION

Triple Rinse														2.00 Days
Radiological Decontamination														4.00 Days

DEMOLITION

Mixer Tank #8														
Walls (East)					44	ft	l	x	6	in	ht	x	0.5	in th = 0.41 cy
Walls (from North to South)														
Wall 1					10	ft	l	x	1	ft	ht	x	0.5	in th = 0.02 cy
Wall 2					9	ft	l	x	1	ft	ht	x	0.5	in th = 0.01 cy
Wall 3					7	ft	l	x	1	ft	ht	x	0.5	in th = 0.01 cy
Wall 4					25	ft	l	x	1	ft	ht	x	0.5	in th = 0.04 cy
Wall 5					14	ft	l	x	1	ft	ht	x	0.5	in th = 0.02 cy
Floor					44	ft	l	x	14	ft	ht	x	0.75	in th = 1.43 cy
Debris Total														2 cy
Torch Cutting to Max dimension of 8ft														
									46	ft	l	\	8	ft sq = 5 cuts
									16	ft	l	\	8	ft sq = 1 cuts
									Total Cuts					6 cuts

5	Cuts	@	16	ft	l	=	80	lf
1	Cut	@	46	ft	l	=	46	lf
Total torch cutting length							126	lf

VIf DUST COLLECTION SYSTEM

DEMOLITION

Removal of machinery (for both the original and supplemental baghouses)														6 days
NOTE: Slab is accounted for in bag house footings in Waste Treatment Building Section VIa														
Fans and Motors for Dust Collection														
Fans					9	ft	l	x	5	ft	ht	x	4	ft th = 7 cy
Motor					2	ft	l	x	2	ft	ht	x	2	ft th = 1 cy
Total Debris														8 cy
Supplemental baghouse (2002)														
Assume debris volume three times the smaller primary baghouse														24 cy
Total debris volume for dust collection systems														32 cy

VIIa MIXED WASTE OPERATIONS BUILDING

DECONTAMINATION

Assume 5 Days for misc equipment and furniture

DEMOLITION OF CONTAMINATED AREA

NOTE: All foundation and first floor concrete with building supports are considered in the contaminated area.

Operations Building (Exterior)

Mixed Waste Operation building (building metal exterior)

Wall Dimensions	NE				30	ft	l	x	27	ft	ht	x	3	in th = 8 cy

Wall Dimensions	East Short	20	ft	l	x	27	ft	ht	x	3	in	th	=	5	cy
Wall Dimensions	East Long	145	ft	l	x	25	ft	ht	x	3	in	th	=	34	cy
Wall Dimensions	NW	88	ft	l	x	27	ft	ht	x	3	in	th	=	22	cy
Wall Dimensions	South	88	ft	l	x	27	ft	ht	x	3	in	th	=	22	cy
Wall Dimensions	West	175	ft	l	x	25	ft	ht	x	3	in	th	=	41	cy
Roof Dimensions	Long	180	ft	l	x	95	ft	w	x	3	in	th	=	159	cy
Roof Dimensions	Short	60	ft	l	x	30	ft	w	x	3	in	th	=	17	cy
Demolition Volume		175	ft	l	x	88	ft	w	x	27	ft	ht	=	415800	cf
Demolition Volume		145	ft	l	x	30	ft	w	x	25	ft	ht	=	108750	cf
Demolition Volume Total														524550	cf
Building Debris Subtotal														306	cy
Interior Walls															
Fire Wall Process area		90.0	ft	l	x	25	ft	ht		6	in	th	=	42	cy
Fire Wall Office area		145.0	ft	l	x	25	ft	ht		6	in	th	=	68	cy
Office area		756.0	lf	l	x	10	ft	ht		6	in	th	=	140	cy
Building Debris Subtotal (Interior Walls)														250	cy
Foundation (Operations Building)															
Stem Wall		584	ft	l	x	2	ft	ht					=	1168	sf
		584	ft	l	x	2	ft	ht		6	in	w	=	22	cy
Footing Dimensions		16	am		x	10	ft	l	x	8	ft	w	=	80	sf
Footing Dimensions		14	am		x	6	ft	l	x	6	ft	w	=	36	sf
Footing Dimensions		12	am		x	4	ft	l	x	3	ft	w	=	12	sf
Footing		80.0	sf		+	36.0	sf		+	12.0	sf		=	128	sf
Footings Subtotal						128.0	sf		x	2.0	ft	th	=	10	cy
Door Footing Dimensions															
Footing Dimensions One Man Door		18	am			3.5	ft	l	x	6	in	w	=	32	sf
Footing Dimensions One Man Door		8	am			4	ft	l	x	6	in	w	=	16	sf
Footing Dimensions Two Man Door		2	am			3.5	ft	l	x	6	in	w	=	4	sf
Footing Dimensions Two Man Door		1	am			7.33	ft	l	x	7	ft	w	=	52	sf
														104	sf
Footings Subtotal						104.0	sf		x	10.0	in	th	=	4	cy
Footing Dimensions Roll Up Door		12	am			9	ft	l	x	12	in	w	=	108	sf
Footing Dimensions Roll Up Door		6	am			14	ft	l	x	12	in	w	=	84	sf
Footing														192	sf
Footings Subtotal						192.0	sf		x	3.0	in	th	=	2	cy
Footing Debris Volume														15	cy
Secondary Containment															
Bracing		150	lf		x	3	ft	ht		1	ft	th	=	17	cy
Bracing		30	lf		x	3	ft	ht		1	ft	th	=	4	cy
Concrete (Drainage Trench)		129	lf		x	3	ft	w	x	1	ft	th	=	15	cy
Subtotal Debris														35	cy
Second Floor Dimensions		96.0	ft	l	x	29.0	ft	w	x	8.0	in	th	=	5	cy
First Floor Dimensions		175.0	ft	l	x	90.0	ft	w	x	12.0	in	th	=	584	cy
First Floor Dimensions(Office lab area)		148.0	ft	l	x	30.0	ft	w	x	8.0	in	th	=	110	cy
Floor Subtotal														699	cy
Door Floor Dimensions															
Slab Dimensions (Baghouse)		28	ft	l		16	ft	w	x	24	in	th	=	34	cy
Roll Up Door		14	ft	l		9	ft	w	x	10	in	w	=	4	cy
One Man Door	9 am	4	ft	l		3.5	ft	w	x	3	in	th	=	14	cy
Two Man Door		8	ft	l		3.5	ft	l	x	3	in	th	=	1	cy
Floors Subtotal														53	cy
Floor Total														752	cy
Total Demolition Debris															
Operations Building														306	cy
Interior Walls														250	cy
Footing Total														15	cy
Secondary Containment Footing Systems														35	cy
Floor Dimensions														752	cy
HDPE Liner		145	ft	l	x	90	ft	w	x	0.28	in	th	=	12	cy
Drum Mixer														1	cy
Macro Extruder														6	cy
Drum Compactor														2	cy
Micro Extruder and Crusher														7	cy
Kinetic Mixer														2	cy

	Dust collection												10 cy
	Building Volume Debris Total												1398 cy
	EXCAVATION OF SECONDARY CONTAINMENT PROCESS AREA												
	Pea Gravel Main Area	145	ft l	x	90	ft w	x	1	ft th	=			484 cy
	Soil Excavation Main Area	175	ft l	x	90	ft w	x	6	in th	=			292 cy
	Area	175	ft l	x	90	ft w				=			1750 sy
	Soil Excavation East Area	148	ft l	x	30	ft w	x	6	in th	=			83 cy
	Area	148	ft l	x	30	ft w				=			494 sy
	Total Contaminated Soil												375 cy
	Backfill volume = sum of pea gravel and soil excavation volumes												859 cy
	Restoration of Grade (soil excavation area only)									=			2244 sy
	Total Excavation Debris												
	Total Pea Gravel												484 cy
	Total Contaminated Soil												375 cy
	EXCAVATION OUTSIDE OF RESTRICTED AREA												
	Parking lot												
	Asphalt	150	ft l	x	15	ft w							250 sy
	Asphalt	150	ft l	x	15	ft w	x	3	in th	=			21 cy
	Haul volume												21 cy
VIIb	**DRUM MIXER #1**												
	DECONTAMINATION												
	Assume one day decontamination												
	Total Estimated Debris Volume												1 cy
VIIc	**MACRO EXTRUDER**												
	DECONTAMINATION												
	Assume 1 day												
	Volume of Debris	10	ft l	x	3	ft w	x	5	ft ht	=			6 cy
VIId	**DRUM COMPACTOR**												
	Debris (estimated)												2 cy
VIIe	**[Reserved]**												
VIIf	**MICROENCAPSULATION EXTRUDER and CRUSHER**												
	DECONTAMINATION												
	Microencapsulation extruder												
	Assume three day decontamination												
	Debris Volumes												
	Extruder	10	ft l	x	3	ft w	x	5	ft ht	=			6 cy
	Crusher (Estimated)												1 cy
	TOTAL volume												7 cy
VIIg	**KINETIC MIXER**												
	DECONTAMINATION												
	Two days												
	Debris Volume (Estimated)												2 cy
VIIh	**[RESERVED]**												
	Box hopper and elevator have been removed.												
VIIi	**DUST COLLECTION SYSTEM**												
	DEMOLITION												
	NOTE: Slab is accounted for in bag house footings in Section VIIa												
	Fans and Motors for Dust Collection												
	Fans	9	ft l	x	5	ft ht	x	4	ft th	=			7 cy
	Motor	2	ft l	x	2	ft ht	x	2	ft th	=			1 cy
	Total Debris												8 cy
	Assume Debris Volume Estimated at												10 cy
VIII	**RAIL CAR UNLOADING FACILITY**												
	DEMOLITION												
	Railroad Pad												
	Retaining walls	30	ft l	x	4	ft ht	x	1	ft th	=			5 cy
	Retaining walls	30	ft l	x	4	ft ht	x	1	ft th	=			5 cy
	Retaining walls	15	ft l	x	4	ft ht	x	1	ft th	=			3 cy
	Retaining walls	15	ft l	x	4	ft ht	x	1	ft th	=			3 cy
													16 cy

	Area	30	ft	l	x	4	ft	ht	x	2	am	=	240	sf
	Area	15	ft	l	x	4	ft	ht	x	2	am	=	120	sf
													360	sf
Floor concrete		15	ft	l	x	30	ft	w	x	1	ft th	=	17	cy
Footing Dimension #1		30	ft	l	x	2	ft	w	x	1	ft th	=	3	cy
Footing Dimension #2		30	ft	l	x	2	ft	w	x	1	ft th	=	3	cy
Footing Dimension #3		15	ft	l	x	2	ft	w	x	1	ft th	=	2	cy
Footing Dimension #4		15	ft	l	x	2	ft	w	x	1	ft th	=	2	cy
Debris Total													10	cy
Footing length		30	ft	l	+	15	ft	l	x	2	ea	=	90	lf
Total Volume of Debris		16	cy		+	17	cy		+	10	cy	=	43	cy
EXCAVATION														
Soil excavation		30	ft	l	x	15	ft	w	x	6	in th	=	9	cy
Earthen Ramp		15	ft	l	x	8	ft	w	x	2	ft ht		9	cy
Took Half of cy to account for slope														
Pad Fill		15	ft	l	x	30	ft	w	x	4	ft ht	=	67	cy
Total soil volume													84	cy
Backfill volume		30	ft	l	x	15	ft	w	x	6	in th	=	9	cy
Restoration of Grade		30	ft	l	x	15	ft	w				=	50	sy

IX RAILROADS INSIDE RESTRICTED AREA

DEMOLITION

Ties, track (fig. 9416-1) get typical tie spacing from fig. 9513-1

Total Rail length	1000	lf												
Spacing	1.5	oc												
Tie Dimension	8	ft long	7	in	ht	x	9	in	w					
Debris Volume - ties							1000	lf	/	1.5	oc	=	667	lf
		666.7	8				7			9		=	87	cy
Rails Cross section area		10.0												
Debris Volume - Rails	2	Rails	1000	ft	l	x	10.0	si	x	2	am	=	6	cy
Total debris volume													93	cy

EXCAVATION

Assume all railroads ballast cross sections are similar to the following dimensions

Ballast	8	ft across on top elevation												
	1.5	ft average depth of ballast												
	18	ft across on bottom elevation												
Ballast Area			18	8	=	26	\	2	=	13	ft x	1.5	sf	
Ballast Volume						19.5	sf	x		1000.0	lf =		723	cy
Base	18	ft across on top elevation												
	1.5	ft of average depth of base												
	26	ft across on bottom elevation												
Base Area			26	18	=	44	\	2	=	22	ft x	1.5	sf	
Base Volume						33.0	sf	x		1000.0	lf =		1223	cy
Total Volume													1945	cy

NOTE: Preliminary excavation along rail bed is assumed to be 50 ft wide and 6 inches deep.
Assume credit for area excavated as part of ballast and base.
Ballast Material Excavation Base Material Excavation

NOTE: Areas along pads and/or buildings to be the max distance available.

Length along East storage pad	500	ft	l											
Run on/ Run off Berm	1000	ft	l											
Total excavation on one side	1500	ft	l											
Area of railroad excavation						1000	lf	x		50	ft	=	50000	sf
Less Area of base						1000	lf	x		26	ft	=	26000	sf
Less barrier of excavation on one side	1500	ft	\			2	am one on each side					=	750	sf
													23250	sf
Preliminary Excavation Volume						23250.0	sf	x		6	in	=	431	cy
Soil volume for disposal						1945.0	cy	+		431	cy	=	2376	cy
Haul volume = soil + ties/track						2376.0	cy	+		93	cy	=	2469	cy
Backfill = soil excavation volume													431	cy
Final Grade													2584	sy

Xa ROADS INSIDE RESTRICTED AREA

NOTE: All roads are assumed to be 25 feet wide and to be excavated at a 6 inch depth of native soil excavation.

EXCAVATION

Road Base	3045	lf		x	25	ft	w	x	12	in	dp	=	2820	cy
Soil	3045	lf		x	25	ft	w	x	6	in	dp	=	1410	cy
Total Excavation													4230	cy

	Backfill = soil excavation volume								1410 cy
	Final Grade				3045 lf	x	25 ft w	=	8459 sy
Xb	**ROADS OUTSIDE RESTRICTED AREA**								
	NOTE: All roads are assumed to be 25 feet wide.								
	EXCAVATION								
	Road Outside Restricted Area								
	Asphalt		750 ft l	x	25 ft w	x	3 in th	=	174 cy
	Final Grade				750 lf	x	25 ft w	=	2084 sy
Xc	**ASPHALT PAD OUTSIDE RESTRICTED AREA**								
	EXCAVATION								
	Asphalt Pad								
	Asphalt		100 ft l	x	50 ft w				556 sy
	Asphalt		100 ft l	x	50 ft w	x	3 in th	=	47 cy
	Final Grade				100 lf	x	50 ft w	=	556 sy
XI	**REAGENT DELIVERY SILOS**								
	DISMANTLEMENT								
	Assume 3 days								
	DEMOLITION								
	Concrete Pad		25 ft l	x	25 ft w	x	24 in th	=	47 cy
	Estimated Debris				5 cy	x	2 ea	=	10 cy
	Total debris								57 cy
XII	**EVAPORATION POND**								
	DEMOLITION								
	Pond Size		250 ft l	x	150 ft w	x	7 ft dp	=	9723 cy
	HDPE Liner		250 ft l	x	150 ft w	x	0.28 in th	=	33 cy
	EXCAVATION								
	Sludge removal		250 ft l	x	150 ft w	x	3 in th	=	348 cy
	Soil Excavation		250 ft l	x	150 ft w	x	6 in th	=	695 cy
	Restoration of Grade		250 ft l	x	150 ft w	x	6 in th	=	695 cy
	Add Pond Depth		250 ft l	x	150 ft w	x	7 ft dp	=	9723 cy
	Haul volume								1076 cy
	Backfill								10418 cy
	Final grade		250 ft l	x	150 ft w			=	4167 sy
XIII	**EVAPORATION TANKS (6)**								
	DEMOLITION								
	Tank #225 and #250 (calculations for one tank)								
	Tank Pad		75 ft l	x	75 ft w	x	10 in th	=	174 cy
	Area		75 ft l	x	75 ft w			=	625 sy
	Stem Wall (sf)		300 lf	x	3 ft ht	x	2 ea	=	1800 sf
	Stem Wall		300 lf	x	3 ft ht	x	6 in th	=	17 cy
	Tank Footings	Outside Cr	30.5 ft rd	x	30.5 ft rd	x	3.14 pi	=	2921 ar
	Tank Footings	Inside Cr	29.5 ft rd	x	29.5 ft rd	x	3.14 pi	=	2733 ar
					2921.0 ar sf	-	2732.6 ar sf	=	21 sy
	Actual Cr		18 in th	x	188.4 ar sf			=	11 cy
	Pad Footings		12 in th	x	300 ft l	x	12 in ht	=	12 cy
	Area		1 ft l	x	300 ft w			=	34 sy
	Truck Unloading Footing		66 lf	x	6 in ht	x	6 in th	=	1 cy
	Area		66 ft l	x	0.5 ft w			=	4 sy
	Truck Unloading Pad		42 ft l	x	12 ft w	x	10 in th	=	16 cy
	Area		42 ft l	x	12 ft w			=	56 sy
	Tank steel								
	Walls		60 ft l	x	6 ft w	x	0.25 in th	=	243 cf
	Floor		60 ft di	x	3.14 pi			=	2826 sf
	Tank debris								9 cy
	Subtotal Debris								240 cy
	Total for both tanks				240 cy	x	2 tanks	=	480 cy
	Tank #125, #150, #175, #200,								
	Evaporation Tanks Pads (2)								
	Stem Wall (sf)		100 lf	x	1 ft ht	x	2 ea	=	200 sf
	Stem Wall		100 lf	x	1 ft ht	x	6.0 in w	=	2 cy
	Floor		30 ft l	x	20 ft w	x	1 ft th	=	23 cy
	Area		30 ft l	x	20 ft w			=	67 sy
	Wash Pad		30 ft l	x	12 ft w	x	1 ft th	=	14 cy
	Area		30 ft l	x	12 ft w			=	40 sy
	Footing Dimensions		100 ft l	x	2 ft w	x	1 ft th	=	8 cy
	Area		100 ft l	x	2 ft w			=	23 sy
	Tank steel		15 ft l	x	8 ft w	x	2 in th	=	cy/each

Tank debris						1	cy	x	4	am	=	4	cy
Subtotal Debris						51	cy	x	2	ea	=	102	cy
Stem Wall Total (sf)												2200	sf
Footing/pad total area						870	sy	x	2	ea	=	1740	sy
Footing/pad total volume												304	cy
Total debris for all tanks						480	cy	+	102	cy	=	582	cy
Soil Excavation Pad		75	ft	l	x	75	ft	w	x	6	in dp	=	105	cy
Truck Unloading Pad Soil		42	ft	l	x	12	ft	w	x	6	in th	=	10	cy
Soil Excavation Tanks	2 am x	30	ft	l	x	20	ft	w	x	6	in dp	=	12	cy
Total in (sy)													748	sy
Total Soil													127	cy
Haul volume = debris + soil						582	cy	+	127	cy	=	709	cy
Backfill = soil excavation volume												127	cy
Final grade = soil excavation area												748	sy

XIV ON SITE OPEN AREAS

Includes anything not covered by other sections and will include heavy machinery, power poles, fencing, utilities, etc.

DEMOLITION

Propane Tanks Pad		30	ft	l		6	ft	w		4	in th	=	3	cy
Cement Exchange Ramp														
Holding Tank						3.14	pi		x	5	ft rd	=	2.91	cy
	2 Sides x	20	ft	ht	x	3.14	pi		x	10	ft di	=	2.96	cy
Tank Total													6	cy
Tank Volume		20	ft	ht	x	3.14	pi		x	5	ft rd	=	59	cy
Retaining Wall		8	ft	l	x	10	ft	ht	x	1	ft th	=	3	cy
Retaining Wall		8	ft	l	x	10	ft	ht	x	1	ft th	=	3	cy
Retaining Wall		15	ft	l	x	10	ft	ht	x	1	ft th	=	6	cy
Debris (sf)													310	sf
Debris Total													12	cy
B-25 Equivalents														
Each container is estimated at		1	cy		x	6000	containers					=	6000	cy
Debris Total													6000	cy

Assume B-25 container torch cut, assume $105.29 per B-25 equivalent

Power Poles

Assume 1 ft diameter. Cut into pieces less than 8' x 10". Dispose of all poles in embankment.

Assume 1 cy / pole and wire

Total Poles Assume 2 days		14	am	x		1	cy	x				=	14	cy
Misc debris Assume 5 days													14	cy
Fencing		3900	lf	l	x	6	ft	ht	x	1	in	=	163	cy
Total debris													191	cy

EXCAVATION

Cement Exchange Ramp		30	ft	l	x	10	ft	ht	x	15	ft w	=	167	cy
Debris Subtotal													167	cy
Tank Volume													-59	cy
Ramp Soil Subtotal													108	cy
Section Between Earthen Ramp and MW Treatment Building														
		200	ft	l	x	75	ft	w	x	6	in dp	=	278	cy
Section Between MW Operations Building and Cell south to MW Treatment building														
		525	ft	l	x	100	ft	w	x	6	in dp	=	973	cy
Section of Land West of Cell to Evaporation Pond (Section Xa & XIII is accounted for in 25 ft less actual measurement)														
		1000	ft	l	x	100	ft	w	x	6	in dp	=	1852	cy
Section Along South of cell to storage pad														
		750	ft	l	x	75	ft	w	x	6	in dp	=	1042	cy
Berm		3200	lf		x	10	ft	w	x	4	ft ht	=	4741	cy
soil		3200	lf		x	10	ft	w	x	6	in dp	=	1334	cy
Total Haul Soil													10328	cy
Haul Volumes														
Poles													14	cy
B-25 Equivalent Containers													6000	cy
Misc Debris													14	cy
Fencing													163	cy
Utilities													191	cy
Debris Total													6382	cy
Soil Total													10328	cy
Total Volume													16710	cy

XV HEALTH PHYSICS STAFF AND RADIATION SURVEY EQUIPMENT

Assume HP support is needed for 18 months to account for pre-closure site preparation and post-closure shut down.

Fully fund HP staff for radiation survey, hazardous waste survey, and construction monitoring activities. Fully fund PPE

survey equipment, badging, and QC confirmatory analytical analysis; take no credit for existing equipment at the site.
The entire site will be monitored to determine the spread of contamination, if any. If contamination is found near the boundaries, off site monitoring will also be performed.
NOTE: Left column reflects original estimated cost; right column incorporates adjustment for inflation.

Equipment: assume							
PPE and Misc Supplies (Lump Sum)						$	10,707.93
In-situ gamma spectrometer (2)						$	41,249.52
Badging						$	16,061.91
QUAl Confirmatory Analysis	400 samples	x	$ 255.00 ea	=		$	105,186.28
Personnel: assume 18 months for all staff							
Senior Health Physicist (per hour)						$	96.33
Senior HP Technician (per hour)						$	60.84
HP Technicians (3) (per hour)						$	50.70
Closure Report: Estimated cost						$	53,644.95
Monuments: Assume 2						$	2,627.08

XVI CELL CLOSURE

The final cover will consist of a filter, gravel, clay, and a flexible synthetic layer as described in the RCRA permit.
Inspection roads will be added with drainage ditches and a drainage field. All retention ponds and Run on/ run off dikes will be removed. A six foot high permanent chain link fence will be installed and maintained.

Covers

Constants for Calculations

Note: All layers except HDPE/Geotextile calculated to the middle of the layer

Compacted soil 'wedge'

Native soil used to fill the area identified as "to be filled with native clay material" between toe of waste and 5:1 slope; see drawing 0017-05

Dimensions 12.5 ft l x # 26 ft l x 38.24 ft 2.5 height

Area= 1/2* base*height

0.5 ft x 38.24 ft x 2.5 ft 48 sf

Radon Barrier

Side Slopes 160.6191 ft l this includes slant details 161 ft
Measurements 157.5 ft l x 31.5 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Slope Corners 25297.51 sf 25298 sf
Measurements 2 Sides 157.5 ft l x 160.6 ft ht
Equation Used to find area was 1/2 * base * height

HDPE and Geotextile

Side Slopes 165.718 ft l this includes slant details 166 ft
Measurements 162.5 ft l x 32.5 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Slope Corners 26929.18 sf 26930 sf
Measurements 2 Sides 162.5 ft l x 165.7 ft ht
Equation Used to find area was 1/2 * base * height

Type B Filter

Slopes 166.9929 ft l this includes slant details 167 ft
Measurements 163.75 ft l x 32.75 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Slope Corners 27345.09 sf 27346 sf
Measurements 2 Sides 163.75 ft l x 167.0 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Sacrificial Soil

Slopes 170.8172 ft l this includes slant details 171 ft
Measurements 167.5 ft l x 33.5
Equation Used to find length was A(square) + B(square) = C(square)

Slope Corners 28611.87 ft l 28612 sf
Measurements 2 Sides 167.5 ft l x 170.8172 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Type A Filter

Slopes 174.641 ft l this includes slant details 175 ft
Measurements 171.25 ft l x 34.25 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Slope Corners 29907.27 sf 29908 sf
Measurements 2 Sides 171.25 ft l x 174.6 ft ht
Equation Used to find area was 1/2 * base * height

Rock Cover

Slopes 179.74 ft l this includes slant details 180 ft
Measurements 176.25 ft l x 35.25 ft ht
Equation Used to find length was A(square) + B(square) = C(square)

Slope Corners 31679.18 sf 31680 sf
Measurements 2 Sides 176.25 ft l x 179.7 ft ht
Equation Used to find area was 1/2 * base * height

Calculate area to be covered
For all layers:
Four corners -- use layer-specific areas calculated above x 4

Radon Barrier	25298 sf	x	4 corners	=		101192 sf
HDPE and Geotextile	26930 sf	x	4 corners	=		107720 sf
Type B Filter	27346 sf	x	4 corners	=		109384 sf
Sacrificial Soil	28612 sf	x	4 corners	=		114448 sf
Type A Filter	29908 sf	x	4 corners	=		119632 sf
Rock Cover	31680 sf	x	4 corners	=		126720 sf

Note: Each sump is 373' (east-west) x 150' (north-south)
Calculate side slope length for 12 sumps
Side slopes -- east and west sides of cell
8 sumps x 150 lf each = 1200 lf - 280 lf (corners at t 920 lf
Side slopes -- north and south sides of cell
2 sumps x 373 lf each = 746 lf - 280 lf (corners at t 466 lf
Total side slope length = 920 lf + 466 lf x 2 = 2772 lf
Top slope
Assume top slope constructed to dimensions for east and south side slopes
Overall topslope area = 920 lf x 466 lf **428720 sf**

Summary: Total area to be covered per layer:
Compacted soil 'wedge'
Volume = cross-sectional area from above x total side slope length
48 sf x 2772 lf = 4928 cy
Add corners: use length of top of waste layer (140 ft) * 8 segments (2 per corner)
Note: This slightly overstates volume at the corner.
48 sf x 140 ft x 8 segments = 1992 cy
Total compacted soil volume **6920 cy**

Note: Assume 11% of radon barrier volume is overburden.
Radon Barrier

Side slopes	2772 lf x	161 ft	=			446292 sf
Corners			=			101192 sf
Top slope			=			428720 sf
Total radon barrier area	**=**	**976204 sf**	x	2	ft thick =	1952408 cf
Total radon barrier volume			=	1952408	cf/27	**72312 cy**
Remove overburden		72,312 cy	x	0.11		**7955 cy**

Deflocculant (STPP)
Applied at a rate of 3.5 lbs STPP per 50 cf radon barrier clay.
1,952,408 cf / 50 = 39048.16 x 3.5 lbs/50cf = 136669 lbs STPP

HDPE and Geotextile						
Side slopes	2772 lf x	166 ft	=			460152 sf
Corners			=			107720 sf
Top slope			=			428720 sf
Total HDPE and Geotextile area			**=**			**996592 sf**
Type B filter						
Side slopes	2772 lf x	167 ft	=			462924 sf
Corners			=			109384 sf
Top slope			=			428720 sf
Total Type B filter area	**=**	**1001028 sf**	x	0.5	ft thick =	500514 cf
Total Type B filter volume	=	500,514 cf				**18538 cy**
Sacrificial soil						
Side slopes	2772 lf x	171 ft	=			474012 sf
Corners			=			114448 sf
Top slope			=			428720 sf
Total sacrificial soil area	**=**	**1017180 sf**	x	1	ft thick =	1017180 cf
Total sacrificial soil volume	=	1,017,180 cf	=			**37674 cy**
Type A filter						
Side slopes	2772 lf x	175 ft	=			485100 sf
Corners			=			119632 sf
Top slope			=			428720 sf
Total Type A filter area	**=**	**1033452 sf**	x	0.5	ft thick =	516726 cf
Total Type A filter volume		516,726 cf				**19138 cy**
Rock cover						
Side slopes	2772 lf x	180 ft	=			498960 sf
Corners			=			126720 sf
Top slope			=			**428720** sf
Total rock cover area	**=**	**1054400 sf**	x	1.5	ft thick =	1581600 cf
Total rock cover volume		1,581,600 cf				**58578 cy**
Total rock converted to tons using 1.6 tons/cy			58,578 cy	x	1.6	**93,725 t**

Roads (East and West)				800	ft	l	x	2	sides	=	1600	lf
Roads (North and South)				960	ft	l	x	2	sides	=	1920	lf
Total Roads											3520	lf
Roads				3520.0	lf		x	12	ft w	=	4694	sy
Roads				42240	sf		x	1	ft th	=	1565	cy
Drainage												
Ditch Perimeters (East and West)				750	ft	l	x	2	sides		1500	lf
Ditch Perimeters (North and South)				910	ft	l	x	2	sides		1820	lf
											3320	lf
Excavation of Ditches		3320	lf	16	ft	w	x	3	ft dp	=	5903	cy
Note: Ditch dimensions updated to those in drawing 0017-06, rev. G.												
Excavation of Material		3320	lf	16	ft	w	x	1.5	ft dp	=	2952	cy
Conversion to tons	1.6 tons / 1 cy			1.6	tons		x	2952	cy	=	4723	ton
Screening	280cy/hour			4723	Tons		\	280	hour	=	17	hr
				17	hour		\	8	hour	=	3	da
Filter Layer												
Excavation of Ditches		3320	lf	16	ft	w	x	0.5	ft dp	=	984	cy
Fences												
Installation of permanent Fencing				3100	lf						3100	lf
Signs		3100	lf	1	per	1		100	ft	=	31	ea

XVII GENERAL CLOSURE OF SECTION

Revegetation Total Restricted Area Less Mixed Waste Cell

Fig 9301-4

Removal of signs Assume 2 days

Restoration of Grade Fill in any depressions not filled in previous sections, including the borrow area to the south:

HAUL TO LANDFILL

Debris Loading, hauling, and Disposal - assume 50 cy not covered previously; 100 miles round trip.

CLEANUP OF VARIOUS ITEMS

NOTE: equipment quantities derive in part from Approval Order by the Utah Division of Air Quality

Heavy Equipment - misc., assume 11
6-Wheel Trucks - assume 2, 3 days each to decontaminate
Bulldozers - assume 2, 2 days each to decontaminate
Front-end Loaders - assume 1, 1.5 days each to decontaminate
Backhoe - assume 2, 1.5 days each to decontaminate
Compactors - assume 1, wash 1/ day
Water Trucks - assume 3, 2 days each to decontaminate
Graders - assume 1, wash 1/ day
Shredders - assume 2, wash 1 / day
Cats - assume 2, wash 1 / day
Pickup - assume 2, wash 4 / day
Rail Cars - 0 max - 1.5 days / car
JCB's - Assume 3, 3 days each to decontaminate
Forklifts - Assume 8, 1 day each to decontaminate
Other - Assume 1, 3 days each to decontaminate

XVIII STOCKPILE OF CLOSURE ASSETS

Envirocare will conservatively not take any credit for soil stockpiles.

XIX MOBILIZATION

Assume 1% of direct costs

XX CONTINGENCY

Assume 3% direct costs

XXI ENGINEERING AND REDESIGN

If the cell is to be closed prior to completion, the only major change will be to cell, adjusting footprints, etc.
The cover design will remain the same.
Assume 3% of direct cost.

XXII RESERVED

XXIII PROFIT AND OVERHEAD

Assume 7% of direct cost

XXIV MANAGEMENT FEE AND LEGAL EXPENSES

Assume 4% of direct cost for management; 1% of direct cost for legal fees

XXV DEQ OVERSIGHT OF PROJECT

Assume 3% of direct costs

XXVI POST OPERATIONAL MONITORING AND MAINTENANCE

Required for 100 years of post-closure period.

Travel	2	hours/ day for 1 week				10	hours per week
Off site Features						4	hours per year

Access road Maintenance - Assume no maintenance needed for first five years; after that a dozer or grader

is needed for 1 day				10	hr /	5	yrs
2	Hours of equipment			0.25			
4	Hours of inspection						
2	Hours average per year.						

Fence Maintenance - Fence is essentially maintenance free; assume some vandalism or broken wires.

4	Hour of inspection						
2	Hours repair per year						
Gates - assume some vandalism		1	Gate	$1,561	Every	5	Years
2	Hours of inspection						
$312.12	Average materials per year						
Signs		1	Sign	$ 520	Every	10	Years
2	Hours of inspection						
$52.02	Average per year						
Monuments		1	Mon.	$4,162	Every	100	Years
2	Hours of inspection						
$ 41.62	Average cost per year						
Wells		1	Well	$3,567	Every	10	Years
Surface Completion per year				$100			
4	Hours of inspection						
$356.65	Average well replacement per year.						
$100.00	Average surface completion						
$456.65	Total average per year.						
Slopes - largely maintenance free.		10	cy	$ 104	Every	5	Years
No other material needed.							
2	Hours inspection						
2	Hours of equipment	8	hr day	0.25			
2	cy of riprap per year						
$ 20.80	Average cost per year						
Cell Structure -	Riprap	10	cy	$ 102	Every	5	Years
	Equipment	10	hr	331.18	Every	5	Years
2	cy of riprap per year						
2	Average hours of equipment per year						
2	Hours of Inspection and vegetation control						
Diversion Channels - inspect, remove vegetation, regrade							
2	Hours of inspection/ labor per year.						
2	Hours of equipment	8	hr day	0.25			

Written report of inspection and Maintenance activities for regulators

XXVII WATER SAMPLES -- RADIOLOGICAL (years 1-100)

Number of wells - Ground Water Quality Discharge Permit total is

14 Monitoring wells (Module VI)

Frequency - annual for 100 years post-closure monitoring period. Frequency 1

Sampling - assume two field technicians for two days:

2 Days per year total

Analysis - radiologic parameters specified by Condition I.F.5 of GWQDP

Average cost per sample to Envirocare.

1,274 Radiologic parameters

Report - included in cost of analysis.

XXVIII WATER SAMPLES -- RCRA (years 1-30)

Number of wells - RCRA Permit total is

14 Monitoring wells (Module VI)

Frequency - annual for 30 years post-closure monitoring period. Frequency 1

Sampling - assume two field technicians for two days:

2 Days per year total

Analysis - all field and radiologic parameters specified by Condition I.F.5 of GWQDP

average cost per sample to Envirocare.

$ 2,250.42 RCRA parameters

Report - included in cost of analysis.

XXIX EMBANKMENT SURVEY (years 1-30)

Fund for 30 year post-closure monitoring period.

Aerial survey of Mixed Waste embankment: cost estimated on current cost of site-wide aerial survey

XXX AIRBORNE PARTICULATE MONITORING

To be performed only in the first year of post-closure 52 weekly visits.

GROSS ALPHA

9	Samples
52	Weeks (1 year) frequency
2	Personnel required for all required sampling

2 Days total
Analysis cost estimate from STL

ISOTOPIC ANALYSIS

6 Samples
1 Frequency
Analysis cost estimate from STL

XXXI SOIL SAMPLING

ALPHA

45 Samples
1 Frequency
Analysis cost estimate from STL

ISOTOPIC ANALYSIS

6 Samples
1 Frequency
Analysis cost estimate from STL

XXXII VEGETATION SAMPLING

Information from 1994 Trust and Table 7.2 of Radiological Monitoring Program (mar 1995)

4 Samples
1 Frequency
Analysis cost estimate from STL

XXXIII GAMMA EXPOSURE MONITORING

8 Samples
4 Frequency
Equipment - assume use "electret" reader owned by Envirocare
Analysis cost estimate from STL

XXXIV RADON EXPOSURE MONITORING

8 Samples
4 Frequency
Analysis cost estimate from STL